

LEGEND

QUATERNARY

- Q: Glacial and glacio-fluvial deposits; sand, gravel, boulder clay, fill, and peats.

CARBONIFEROUS

- CB: BARACHOIS GROUP (Pennsylvanian–Upper Carboniferous)
 - Mainly red and green sandstone, siltstone, shale, and mudstone; minor coal seams; conglomerates.
- C: SHANADITHIT FORMATION: Mainly poorly indurated red and grey sandstone and conglomerate, minor limestone and siltstone.

SILURIAN

- SPmi: PUDDLE POND COMPLEX (ca. 431 Ma)
 - Foliated to unfoliated; dark grey to green; mainly medium- to coarse-grained, partly amphibolized equigranular to plagioclase-granitic hornblende diorite, gabbro, or diabase. Gabbro locally contains layers of pyroxene and pagmatite pods. Cut by pink felsic dykes of the Lake of the Hills Intrusive Suite (LSI). Mafic rocks commonly have mixed or to non-apatite compositions. Locally orthopyroxene- or clinopyroxene-bearing in the Cormacks Lake complex.
- SPs: Foliated to unfoliated; mainly layered cumulate sequence of anorthosite, troctolite, olivine monite, norite, gabbro/norite, olivine gabbro, and gabbro, with minor pyroxenite. Minor alteration to epidote, hornblende and/or actinolite and chlorite.

ORDOVICIAN

- OSBtg: SOUTHWEST BROOK COMPLEX (ca. 461 Ma)
 - Generally well foliated; white, medium- to coarse-grained, mainly biotite- and/or hornblende-bearing, tonalite and/or granodiorite. Includes minor quartz-diorite. Commonly contains abundant mafic enclaves or schollen of diorite, amphibolite, and hornblende. Mafic enclaves or schollen are locally as abundant as the rock appears aphanitic. The mafic enclaves/schollen in part probably represent relict cross-mingling structures largely destroyed by continuous veining by tonalite. Commonly displays epidote alteration. Locally includes crosscutting pink muscovite-bearing apatite, granite and pagmatite dykes of the Lake of the Hills Intrusive Suite (LSI) and gabbro or diorite of the Puddle Pond Complex (SPmi).
- OSBdt: Generally well foliated; medium- to coarse-grained; biotite and hornblende-bearing quartz diorite and/or tonalite. Characteristically contains abundant blue quartz eyes and displays various degrees of epidote alteration. Apatite structure due to enclaves or schollen of amphibolite and hornblende is common. Contains locally apatite and pagmatite dykes, and massive quartz xenoliths (2–3 cm). Is intruded by members of OSBtg.
- OSg: Foliated to unfoliated biotite granodiorite and/or granite, locally with K-feldspar megacrysts. May in part be equivalent to SPs. Some granites containing muscovite and may be equivalent to SPs.

NEOPROTEROZOIC TO MIDDLE ORDOVICIAN

- Ocg: CORMACKS LAKE COMPLEX (> 453 Ma)
 - Mainly well-bedded granodiorite to tonalite orthogneiss (ca. 483 Ma).
- Ocmi: Metagabbro, orthopyroxene- and/or clinopyroxene-bearing.
- Ocmv: Strongly foliated; locally gabbro or layered mafic volcanic rock. Probably also includes minor diabase and gabbro. Generally intensely metamorphosed into garnet and/or clinopyroxene-bearing amphibolite. Some mafic rocks contain layers rich in gneiss, which suggest that some volcanic rocks experienced pre-metamorphic hydrothermal alteration.

NEOPROTEROZOIC AND OLDER

- MSMA: STEEL MOUNTAIN COMPLEX
 - Massive to strongly foliated; pegmatite white to lilac anorthosite, gabbroic anorthosite, and anorthosite gneiss; cumulate textures along the margin.
- MNCL: UNDIFFERENTIATED CORNER BROOK LAKE COMPLEX (ca. 1510 Ma)
 - Quartzite-kalafatis gneiss and migmatite, with interbedded amphibolite, minor quartzite, marble, and quartz-feldspathic mica gneiss, orthopyroxene-bearing gneiss; may include gneisses related to Here Hill Complex (Nest) (see OF42); a local occurrence of apatite and pagmatite dykes.

DENNIS POND COMPLEX (> 488 Ma)

- COOgpb: Mainly gabbro. Includes minor troctolite and trondhjemite.
- COOpm: Mainly layered ultramafic rock; includes dunite, harzburgite, hercynite, wehrlite, websterite, pyroxenite. Locally contains chrome-rich layers. Also includes minor gabbro and trondhjemite. Variably metamorphosed and altered to anorthophyllite, cumingtonite, serpentine, talc, and chlorite.
- NODpsm: Characteristically unlayered and chaotic; strongly metamorphosed and migmatitic mélange, consisting of abundant large blocks and cobbles of mafic rocks in a pelitic to sericitic matrix.
- NODps: Mainly chlorite and muscovite bearing schistose mixture of granulite and metasediments, with local tectonic inclusions of other Dennis Pond complex units; the metasediments in part are correlative to Meschief Mélange of Hall and van Staal (1990).
- NOSgs: Tectonic zone consisting of granulite hornblende and calcalkaline, strongly deformed paragneisses, orthopyroxene, granite, and anorthosite; migmatite and calcalkaline protomylonites are principally sedimentary (NOCps), but also granulite (OSBtg), and anorthosite (MSMA); may include minor amounts of Silurian leucogranite (Sg).

Geological boundary (approximate, assumed, gradational)

- Fault, undifferentiated (assumed)
- Fault, approximate (sinistral)
- Unconformity
- Outcrop (this study, compiled)
- Bedding, top known (overturned)
- Bedding, top unknown (inclined, vertical)
- Foliation: S, main and/or composite (inclined, vertical)
- Lineation: main, mineral or extension
- Z-fold, plunge and plunge direction (generation unknown)
- M-fold, plunge and plunge direction (generation unknown)
- U/Pb zircon age determination
- Mineral occurrence; National Mineral Inventory Number

REFERENCES

Dunning, G.R., 1984. The geology, geochemistry and regional setting of the Anticosti Complex and related rocks of southwest Newfoundland, Ph.D. thesis, Memorial University, Saint John's, Newfoundland, Canada, 413 p.

Dunning, G.R., O'Brien, S.J., Coleman-Saunders, S.P., Blackwood, S.P., Dixon, R.F., O'Neil, J.P., and Krogh, T.E., 1990. Sm-Nd ages for the Newfoundland Appalachians. *Journal of Geology*, v. 98, p. 855-843.

Hall, L.A.F. and van Staal, C.R., 1999. Geology of the southern end of the Long Range Mountains (Dashedwood subzone), Newfoundland. Geological Survey of Canada, Open File 3727, scale 1:50 000, doi:10.4095/372704.

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van Staal, C.R. and Currie, K.L., 1988. Geology of the Puddle Pond (1:250 000) and Little Grand Lake (1:250 000) map areas, southwestern Newfoundland, in Current Research, Newfoundland Department of Mines and Energy, Mineral Development Division, Paper 88-1, p. 89-107.

Sample number	NL geochron database	UTM (zone 21, NAD 83) easting	UTM (zone 21, NAD 83) northing	Crystallization age / Ma	Year of analysis	Laboratory	Reference
81-HPAD-218	8064	424130	5367602	431 ± 2	1990	ROM	Dunning et al., (1990)
POB-SP-02-738 (27516)		421893	5357960	ca. 463	2002	GSC	McNicoll and Pehrsson, unpublished
POB-SP-02-738 (27523)		423137	5357921	ca. 430	2002	GSC	McNicoll and Pehrsson, unpublished

Table 1. U-Pb geochronology.

Mineral Occurrence ¹	UTM (zone 21, NAD 83) easting	UTM (zone 21, NAD 83) northing	Name	Commodity	Status
Au 001	403227	5358530	Flat Bay Brook	Au, Ag, Cu, Sb, As	Showing
Cr 001	412700	5356530	Dennis Pond South Chromite	Chromium	Showing
Fe 001	401450	5361750	Bishop North	Fe, V, Ti	Past producer (domant)
Fe 002	401050	5361400	Bishop South	Fe, V, Ti	Past producer (domant)
Fe 003	400800	5361100	Bishop No. 3	Fe	Prospect
Fe 004	399850	5359450	Hayes Prospect	Fe, V, Ti	Prospect
Fe 005	398250	5357450	Hudson Prospect	Fe, Cu	Prospect
Fe 006	401750	5360000	Brady Brook East	Fe	Showing
Fe 007	406550	5369050	Barachois Pond	Fe	Showing
Fe 008	426020	5368100	Southwest Brook South	Fe	Showing
Fe 009	412700	5358900	Dennis Pond South Iron	Fe	Showing
Gyp001	394850	5361000	Sheep Brook	Gypsum, anhydrite	Developed prospect
Gyp002	392450	5358900	Coal Brook	Gypsum, anhydrite	Past producer (domant)
Py001	425500	5371450	Southwest Brook Northeast	Pyrite	Showing

Table 2. Mineral occurrences.

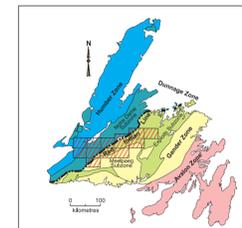


Figure 1. The principle tectonic zones of Newfoundland and Labrador and the position of the Red Indian Line.

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New geology and interpretation by S.J. Pehrsson, A.G. Brem, and C.R. van Staal (2000–2010)

Geological compilation by C.R. van Staal and N. Rogers (2003)

Pre-existing geological data presented on map compiled from Dunning (1984), Hess and Dunning (1979), and van Staal and Currie (1988)

Distribution of units and position of geological boundaries in part inferred from geophysical data (Onesick et al., 2001, 2002)

OPEN FILE 1666
GEOLOGY
MAIN GUT
NEWFOUNDLAND AND LABRADOR
Scale 1:50 000/Echelle 1/50 000

Unités géologiques et position des limites géologiques en partie inférées de données géophysiques (Onesick et al., 2001, 2002)

Cartography by P. St-Amour, Data Dissemination Division (DDD)

Any revisions or additional geological information known to the user would be welcomed by the Geological Survey of Canada

Digital base map from data compiled by Natural Resources Canada, modified by DDD

Some geographical names subject to revision

Magnetic declination 2013, 19°45' W, decreasing 11.3" annually

Elevations in feet above mean sea level

12-B16	12-A13	12-A14	12-A15	12-A16	2-D13
			OF4546	OF4545	
OF4821	OF1666	OF1669	OF4544	OF4547	2-D12
12-B08	12-A05	12-A08	12-A11	12-A08	2-D05
OF1666	OF1664	OF1667	OF4597		
12-B11	12-A06	12-A03	12-A02	12-A01	2-D04
	OF1665				

NATIONAL TOPOGRAPHIC SYSTEM REFERENCE AND INDEX TO GEOLOGICAL SURVEY OF CANADA MAPS

The Targeted Geoscience Initiative is a federally funded program of the Geological Survey of Canada (GSC), carried out with the collaboration and in-kind support of the Geological Survey of Newfoundland and Labrador (GSNL).

The Red Indian Line Project has been conducted by the GSC in areas previously mapped by the GSNL and the GSC. Results of the project have been combined with existing geological and geophysical maps, and unpublished industry data, to produce a new compilation of the geology.

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Les dossiers publics sont des produits qui n'ont pas été soumis au processus officiel de publication de la GSC.

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